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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,935	11/26/2003	Myoung-Soo Kim	8836-224 (IB12207-US)	9638
22150	7590	05/19/2005	EXAMINER	
F. CHAU & ASSOCIATES, LLC			VU, HUNG K	
130 WOODBURY ROAD			ART UNIT	
WOODBURY, NY 11797			PAPER NUMBER	

2811

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/722,935	KIM, MYOUNG-SOO	
	<b>Examiner</b>	<b>Art Unit</b>	
	Hung Vu	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 March 2005.
- 2a) ☒ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 7, 10 and 12-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Seshadri et al. (PN 6,730,950, of record).

Seshadri et al. discloses, as shown 5C, 6B and 10C, a semiconductor device formed over a semiconductor substrate including a memory cell area and a peripheral circuit area, the semiconductor device comprising:

a MOS transistor (69c) having a floating gate electrode, the MOS transistor being disposed at the memory cell area;

an OTP ROM capacitor having a lower electrode (61), an upper intermetal dielectric (68), and an upper electrode (66) with are stacked in the order name, the OTP ROM capacitor being disposed over the MOS transistor;

a floating ate plug (61c) connecting the floating gate electrode with the lower electrode, wherein the floating gate electrode, the floating gate plug, and the lower electrode constitute a conductive structure which is electrically insulated. Note that Seshadri et al.

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discloses the same structure as claimed, therefore, it is inherent that the structure is an OTP ROM.

With regard to claim 2, Seshadri et al. discloses the device further comprising a capacitor that is disposed in the peripheral circuit area and includes a lower capacitor electrode, a dielectric film, and an upper capacitor electrode which are stacked in the order named.

With regard to claim 3, Seshadri et al. discloses the lower electrode and the upper electrode are identical to the lower capacitor electrode and the upper capacitor electrode in material and thickness.

With regard to claim 4, Seshadri et al. discloses the upper intermetal dielectric and the dielectric film are identical in material and thickness.

With regard to claim 7, Seshadri et al. discloses the device further comprising a lower intermetal dielectric (69d) formed below the upper intermetal dielectric.

With regard to claim 10, Seshadri et al. discloses the device further comprising a contact plug (61a,61c) which is connected to an impurity region of the semiconductor substrate and is made of the same material as the floating gate plug.

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With regard to claims 12 and 13, Seshadri et al. discloses the upper electrode comprises a first upper electrode (upper portion) and a second upper electrode (lower portion) disposed over the first upper electrode.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Seshadri et al. (PN 6,730,950).

With regard to claim 5, Seshadri et al. discloses the claimed invention including the device as recited in the rejection above. Seshadri et al. does not disclose the material of the upper intermetal dielectric layer. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device of Seshadri et al. having the materials as that claimed by Applicant, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

With regard to claim 11, Seshadri et al. discloses the claimed invention including the device as recited in the rejection above. Seshadri et al. does not clearly disclose the device further comprising a bitline, wherein the contact plug connecting the bitline to the impurity region of the

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semiconductor substrate. However, in Figures 1, 2 and 6A, Seshadri et al. discloses a diagram of the circuit that includes a bitline. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device of Seshadri et al. including the bitline in order to provide the input signal to the device.

3. Claims 6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seshadri et al. (PN 6,730,950, of record) in view of Tu et al. (PN 6,602,749, of record).

With regard to claim 6, Seshadri et al. does not disclose the upper intermetal dielectric layer is disposed over an entire surface of the substrate. However, Tu et al. discloses a device comprising an upper intermetal dielectric layer (28) disposed over an entire surface of a substrate. Note Figure 1 of Tu et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form an upper intermetal dielectric layer disposed over an entire surface of the substrate, such as taught by Tu et al. in order to further prevent the moisture from entering the active device.

With regard to claims 8 and 9, Seshadri et al. does not disclose the lower intermetal dielectric forms an opening and the upper electrode is formed in the opening. However, Tu et al. discloses the device having a lower intermetal dielectric (24) formed below an upper intermetal dielectric (28), wherein the lower intermetal dielectric forms an opening and the upper electrode is formed in the opening. Note Figure 1 of Tu et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device of Seshadri et al. having a lower intermetal dielectric formed below the upper intermetal dielectric, wherein the

lower intermetal dielectric forms an opening and the upper electrode is formed in the opening, such as taught by Tu et al. in order to further increase a surface coupling capacitor of the device.

### ***Response to Arguments***

4. Applicant's arguments filed 03/02/05 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., ... a floating gate electrode (130, a floating gate plug (174), and a lower electrode (184) being electrically insulated by a gate insulating layer (120), an interlayer dielectric (150), and an intermetal dielectric (205)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

It is argued, at pages 5-6 of the Remarks, that the conductive structure in Seshadri et al. including a gate electrode, a gate plug (61c), and a lower electrode (61) is not electrically insulated because the lower electrode (61) is electrically connected to another electrode such as a drain region (69b) through gate plugs (61b and 61d) in E2 and E4 regions. This argument is not convincing because the claimed language does not specifically state what the conductive structure is electrically insulated from. As in this case, the conductive structure of Seshadri et al. is electrically insulated from an upper electrode (66).

*Conclusion*

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Mon-Thurs 6:00-3:30, alternate Friday 7:00-3:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The Central Fax Number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



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Vu

May 3, 2005

Hung Vu

Hung Vu

Primary Examiner